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Al Bates
Manager
Regulatory Affairs &
Nuclear Oversight

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Decontrolled when separated from Enclosure 3.

10 CFR 72.7
10 CFR 72.106(b)

December 16, 2021

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: **Docket No. 72-041**
Request for Exemption from 10 CFR 72.106(b)
San Onofre Nuclear Generating Station (SONGS)
Independent Spent Fuel Storage Installation (ISFSI)

In accordance with 10 CFR 72.7, "Specific Exemptions," Southern California Edison (SCE) requests NRC approval for exemption from a requirement of 10 CFR 72.106(b) for the San Onofre Nuclear Generating Station (SONGS) Independent Spent Fuel Storage Installation (ISFSI). The requirement for which exemption is requested is that the minimum distance from an ISFSI to the ISFSI Controlled Area Boundary (CAB) be at least 100 meters (the distance currently being used). Instead, SCE wishes to establish the ISFSI CAB at or within the site boundary which coincides with well-controlled physical boundaries that in some places are less than 100 meters from the ISFSI: the North Industrial Area (NIA) seawall to the west of the ISFSI and the Owner Controlled Area (OCA) fence line to the East of the ISFSI.

As described in Enclosure 1 to this letter, the NRC's criteria for granting an exemption, found in 10 CFR 72.7, will be met. Establishing the ISFSI CAB at or within the site boundary as proposed improves physical control of the CAB and is in the public's interest and will not endanger life or property. Enclosure 1 provides information regarding the calculations of the dose to a member of the public on the proposed CAB, which demonstrate that neither life nor property are endangered.

Enclosure 2 provides an affidavit from Holtec International affirming that the information in Enclosure 3 is proprietary and should be withheld from public disclosure. Enclosure 3 contains a calculation, performed by Holtec, of dose consequences to an individual at the proposed boundary following a hypothetical loss of water jacket during future spent fuel transfer operations. The results of this analysis confirm that the accident dose rate remains well below federal limits, and therefore the safety of personnel is assured even during adverse hypothetical events.

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P. O. Box 128
San Clemente, CA 92674

This exemption request is not needed by a particular date to support any decommissioning activities. Rather, SCE is requesting this exemption in response to a condition of a lease that was granted by the California State Lands Commission with the aim of furthering the public interests related to coastal access, including access to the beach and to the walkway that runs alongside the seawall on the seaward side of the site boundary. Therefore, SCE is requesting NRC approval of this exemption request as soon as practical.

There are no commitments in this letter or the enclosure.

If you have any questions, please contact Mr. Al Bates at (949) 368-6945.

Sincerely,

Enclosures: 1. Exemption Request from 100 meter requirement for ISFSI Controlled Area Boundary of 10 CFR 72.106(b)
2. Affidavit from Holtec specifying Proprietary Information
3. Holtec Calculation HI-2210810 (Proprietary)

cc: S. A. Morris, Regional Administrator, NRC Region IV
A. M. Snyder, NRC Project Manager, SONGS Units 1, 2 and 3

ENCLOSURE

Exemption Request from 100 meter requirement for ISFSI Controlled Area Boundary of 10 CFR 72.106(b)

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I. SPECIFIC EXEMPTION REQUEST

In accordance with 10 CFR 72.7, "Specific Exemptions," Southern California Edison (SCE) requests NRC approval for exemption from a requirement of 10 CFR 72.106(b) for the San Onofre Nuclear Generating Station (SONGS) Independent Spent Fuel Storage Installation (ISFSI). This requirement is that the minimum distance from an ISFSI to the ISFSI Controlled Area Boundary (CAB) be 100 meters.

SCE is requesting exemption from this minimum distance such that the ISFSI CAB may be established within or concurrent with the site boundary, providing SCE with continuous physical control over the CAB. This would result in a minimum distance from the closest storage location in the ISFSI to the CAB of 38 meters to the seaward side and 95 meters on the eastern side. This also results in a minimum distance from the ISFSI Protected Area (PA) fence line to the CAB of 16.6 meters to the seaward side and 75 meters on the eastern side.

II. BACKGROUND

The SONGS site consisted of three reactors. Unit 1 is largely dismantled with its former site now occupied by the ISFSI (in part). Units 2 and 3 are permanently shut down with all spent fuel removed from the spent fuel pools. Spent fuel and Greater than Class C Waste is and will be stored within the ISFSI on site. The ISFSI consists of two spent fuel storage systems, a Transnuclear (TN) Standardized Advanced NUHOMS® Horizontal Modular Storage System (which uses both 24PT1 and 24PT4 canisters) and the Holtec Underground Maximum (UMAX) storage system.

During initial licensing of the SONGS ISFSI, SCE decided to establish the SONGS ISFSI CAB congruent with the Exclusion Area Boundary (EAB) for SONGS Units 1, 2 and 3 that had been previously developed in accordance with the reactor siting criteria of 10 CFR Part 100. The SONGS EAB is a semi-elliptical boundary with a radius of 1967.5 feet (600 meters) centered on the Units 2 and 3 containment centerlines. The SONGS EAB was established to account for the potential off-site dose consequences from design-basis accidents at the then operating Units 1, 2, and 3 (Unit 1 ceased operations in 1992 and Units 2 and 3 ceased operations in 2013).

Several public thoroughfares traverse the SONGS EAB, including Interstate 5, Basilone Road, the BNSF railway to the landward side, and a beach walkway and the Pacific Ocean to the seaward side (see Figure, in the Attachment to this document). SCE maintains agreements with Marine Corps Base Camp Pendleton and other State and Local agencies for control of members of public access to these areas and thoroughfares during certain emergency conditions. Similarly, for the CAB, these public thoroughfares are allowed in accordance with 10 CFR 72.106(c) provided that appropriate and effective arrangements are made for the protection of the health and safety of the public.

SCE does not place any day-to-day restrictions on access to these areas or public thoroughfares. The agreements with Camp Pendleton and other state and local entities cover emergency conditions including, but not limited to, a radioactive release, hostile action, fire, and other natural disasters.

ENCLOSURE

Exemption Request from 100 meter requirement for the ISFSI Controlled Area Boundary of 10 CFR 72.106(b)

In 2019, the California State Lands Commission (CSLC) held a proceeding to approve a lease[1] for the land on which the SONGS offshore conduits are installed and to approve the final Environmental Impact Report for the Decommissioning of SONGS Units 2 and 3. As part of that proceeding, the CSLC imposed, and SCE (here, "Lessee") agreed to, Lease Condition 32, which states:

> At the conclusion of the transfer of the SONGS spent nuclear fuel to the Approved Independent Spent Fuel Storage Installation (Approved ISFSI), the Lessee shall seek approval from the NRC to decrease the size of the Exclusion Area Boundary to the minimum required by law. Lessee and Lessor shall jointly consult with the California Coastal Commission (CCC) to ensure that such an approval, if granted, will not interfere with Lessee's compliance with CCC permit conditions.

In order to comply with this lease condition, SCE is separately pursuing the elimination of the SONGS EAB. SCE intends to implement this without prior NRC approval based upon a thorough review in accordance with 10 CFR 50.59. The basis for elimination of the EAB is the permanently shut down and defueled condition of all three units, which eliminates the possibility of a fission product release from a reactor core and the respective containment buildings, which is the premise of the establishment of an exclusion area in the reactor siting criteria of 10 CFR 100. As part of license amendments reflecting the ISFSI-only status of SONGS (ADAMS Accession No. ML17345A657), the NRC approved removal of the EAB description from the technical specifications and acknowledged in the associated Safety Evaluation that future changes to the EAB would be under licensee control.

While compliance with the lease condition only requires an attempt to decrease the size of the EAB, SCE believes that also shrinking the CAB to or within the site boundary will similarly serve the public's interests related to beach access that underlie the lease condition. The proposed CAB will accomplish this by allowing SCE to relinquish all explicit control of areas beyond the site boundary during both normal operations and post-accident conditions. Bringing the ISFSI CAB into or within the site boundary will also allow SCE to modify the agreement with Camp Pendleton because SCE will no longer have control of areas beyond the site boundary. SCE will continue to monitor on-site conditions and will maintain procedural requirements to inform Camp Pendleton and other agencies of any emergency declaration so that they may take appropriate action in accordance with their all-hazards emergency plans.

Because the site boundary on the seaward side of the ISFSI is less than 100 meters (a minimum of 38 meters from the closest storage location) shrinking the CAB to or within the site boundary necessitates an exemption from the requirement for a 100 meter distance between the ISFSI and the CAB found in 10 CFR 72.106(b). The site boundary is also less than 100 meters from the nearest storage location on the east side of the ISFSI (a minimum of approximately 95 meters from the closest storage location).

The proposed CAB is congruent with the site boundary to the west and east. Those boundaries include the NIA Seawall and the OCA fence-line. The northern and southern boundaries of the proposed controlled area cross the SONGS site and are entirely within the site boundary (see Figure in the attachment).

The shrinking of the CAB from its present position as depicted on the attached Figure to its new position is planned to occur in two stages. First, under the provisions of 10 CFR 72.48, SCE

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[1] California State Lands Commission Lease No. PRC 6785.1 "SONGS Unit 2 and 3 Offshore Properties, Condition 32.

has already reduced the CAB to a position that is 100 meters from the ISFSI fence all around the ISFSI (as shown by the black dashed boundary in the attached Figure "CAB line"). Second, upon NRC approval of this present request for exemption, SCE would establish the CAB at or within the site boundary (the dashed purple boundary on the attached Figure) in order to take advantage of physical barriers and associated access controls.

III. DISCUSSION

a. Dose Analysis

10 CFR 72.106(b) provides the post-accident dose limits for individuals located on or beyond the ISFSI CAB and is also the source of the 100 meter minimum distance requirement. No basis for the 100 meter minimum distance requirement has been identified other than to ensure adequate protection of the public from radiological dose. Therefore, exemption from the 100 meter minimum distance requirement is appropriate if the dose criteria of 10 CFR 72.106(b) and, as discussed below, 10 CFR 72.104 are shown to be met.

The dose acceptance criteria of 10 CFR 72.106(b) are post-accident dose criteria as contrasted with the normal operational limits in 10 CFR 72.104 addressed below. There are no Design-Basis Accidents (DBA) with off-site dose consequences challenging the limits in 72.106 (5 rem whole-body dose being the most limiting). The storage system vendors, in the associated Safety Analysis Reports that were reviewed by the NRC in support of the Certificates of Compliance, concluded there were no DBAs that have any off-site dose consequences during storage. However, during certain short duration phases of transfer operations of canisters loaded with spent fuel there are DBA for each system that could result in off-site dose consequences.

The existing accident analyses modelling transfer operations for both the TN and Holtec storage systems were reviewed. With one exception, there was enough information in the analyses to determine that the potential dose from these postulated events would still meet the dose acceptance criteria of 10 CFR 72.106(b) using the proposed CAB minimum distance. The exception was for the loss of water jacket event for the Holtec system. At SCE's request, Holtec performed a site-specific calculation of dose consequences for this event using the revised minimum distance from the nearest storage location of 38 meters. The results of the calculation show a 30-day dose of 3.87 rem, which meets the "not to exceed 5 rem" dose criterion of 10 CFR 72.106(b).

Initial pool-to-pad transfer operations are now complete and future movement of canisters (such as those that will occur when the spent fuel and GTCC canisters are transferred off the ISFSI pad) will have lower dose consequences than transfers occurring now or during the pool-to-pad transfer operations completed in 2020 because of the continued decay of the spent fuel. This ensures the analysis remains conservative and durable.

In accordance with 10 CFR 72.212(b)(5)(iii), SONGS has also performed a dose analysis using the annual, normal operating dose criteria of 10 CFR 72.104, which calculates dose to a member of the public at the proposed CAB. The analysis is based on a combination of dose contributions from:

(1) **TN ISFSI Storage dose calculation** - Current spent fuel and Unit 1 GTCC storage in

the TN Advanced Horizontal Storage Modules (AHSMs) on the eastern portion of the ISFSI.

(2) **Future ISFSI Units 2/3 Greater than Class C (GTCC) Storage dose calculation** - Future storage of Units 2 and 3 Greater than Class C (GTCC) waste that will be placed in AHSMs on the eastern portion of the ISFSI during the dismantlement of Units 2 and 3.

(3) **Holtec ISFSI dose calculation** - Current spent fuel storage dose calculations for the Holtec UMAX storage systems on the western portion of the ISFSI.

Each of these contributions are individually addressed in vendor calculations performed on behalf of SCE using conservative inputs and using Licensing Basis methodology applied to each storage location. Some of the conservative assumptions used in these calculations are summarized below.

Results

The calculation combines the reported dose values at representative bounding locations and makes adjustments based on the occupancy factors used in SONGS Annual Radiological Effluent Release Report to the NRC.

- The §72.104 whole body TEDE regulatory limit is **"not to exceed" 25 mrem/year**.
- The maximum calculated whole body TEDE dose along the proposed CAB is **6.93 mrem/year**.

The 2021 Annual Radiological Effluent Release Report (2020 results) included fixed TLD measured dose at the limiting location along the proposed CAB and applying an occupancy factor of 300 hr/yr, (as was done in the dose calculations) results in a dose of **0.60 mrem**/year. This includes the impact of doses due to fuel canister movement activities that took place that year and which are now complete. This confirms the conservatisms in the calculations.

Conservatisms In Calculational Inputs

(1) Principal conservatisms in TN ISFSI Storage dose calculation

a. Each AHSM is conservatively assumed to be loaded with design basis San Onofre Unit 1, 2 or 3 fuel assemblies (FA). The Unit 1 design basis FA is based upon a maximum burnup of 45,000 MWD/MTU with 10 years of cooling. The Units 2 and 3 design basis FA is based upon a maximum burnup of 45,000 MWD/MTU with 5 years of cooling. These assumptions are conservative compared to the actual fuel assembly characteristics.
b. An extra loaded AHSM module assumed to be included in ISFSI Phases 3 and 4.
c. The TN calculation is based on a projected series of transfer campaign phases where fuel was to be transferred from the spent fuel pools to the ISFSI. The calculation selects the assumed canister characteristics from the projections for campaign Phases 3 and 4, which bound the actual transfer sequence. At each reported location, the higher value of campaign phases 3 and 4 is used.
d. No credit is taken for any decay of any sources before the assumed loading dates (Phase 3 in 2011 and Phase 4 in 2014) and to the present.
e. The calculation does not take credit for any shielding provided by the Holtec ISFSI.

(2) Principal conservatisms in Units 2/3 Greater than Class C (GTCC) Storage dose calculation

a. The GTCC storage dose calculation assumes 12 AHSMs are loaded with GTCC waste (scheduled over the next few years) contained in 10 Radioactive Waste Canisters (RWC-WA) and 2 repurposed 24PT4 dry storage canisters. The ten RWC-WAs will be loaded with Units 2 and 3 reactor vessel internals segmentation waste, and two repurposed 24PT4 dry storage canisters will be loaded with Units 2 and 3 spent fuel pool legacy waste. Each of the ten RWC-WAs are assumed to contain the maximum allowed Cobalt-60 activity of 323,000 Ci generated by reactor vessel internals segmentation. The actual equivalent Cobalt-60 activity in each will be less than the maximum allowed. Dose from the two repurposed 24PT4s dry storage canisters is calculated using a bounding Co-60 activity of 6,000 Ci per canister. The TN calculation does not credit shielding by the Holtec ISFSI.

(3) Principal conservatisms in Holtec ISFSI Storage and Transfer dose calculation

a. The calculation does not credit shielding by TN ISFSI.
b. Simplification in modeling soil level results in less soil being modeled, which leads to slightly conservative results.
c. The seawall is assumed to be 50% degraded resulting in less shielding.

Projected Future Changes to Calculated Results

The dose at the proposed CAB from the combination of storage and future transfer operations was also estimated. It is not detailed here because of the multitude of variables including time frame (and thus associated changes in source term), location of the transfer facility, transfer process details, duration of each transfer operation, and rate of transfers.

The estimate confirms that transfer operations can be readily supported without need for further changes to the site boundary portions of the CAB beyond those proposed in this exemption request. The location of any cask transfer facility will be selected and confirmed to comply with 10 CFR 72.106 and 10 CFR 72.104 when the associated variables are known or can be accurately estimated as required by 10 CFR 72.212(b)(5)(iii). The actual dose contribution from existing and planned GTCC storage and several additional years of measured dose values will also be available.

When the location and schedule for such activities are more certain, compliance with other applicable limits will be validated and general RP/ALARA requirements will be established, monitored, and maintained.

b. Other Considerations

ISFSI Certificate of Compliance Requirements

SCE has reviewed the Certificate of Compliance (CofC) 72-1029, through Amendment 4 for the TN system and CofC 72-1040, through Amendment 4 for the Holtec system and has determined that this proposed exemption has no impact on any CofC requirements. Note SCE has not yet adopted Amendment 4 to CofC 72-1040 but intends to do so in coming months.

Physical Security Plan

There are no changes to any physical barriers resulting from this proposed exemption. Access is currently allowed to the public on the beach walkway and seaward of the walkway, which are the areas that will no longer be within the ISFSI CAB resulting from this proposed exemption.

Therefore, there will be no impact to the Physical Security Plan resulting from this proposed exemption.

Emergency Plan

The primary impact of EAB elimination to the SONGS Emergency Plan will be to replace the Plan's references to the EAB with references to the Site Boundary for onsite protective actions. Following the transfer of all Spent Fuel to the ISFSI, the EAB is no longer necessary due to the absence of Design Basis Accident driven off-site consequences as detailed in 10 CFR 100.11.

More specifically, in accordance with 10 CFR 50.54(q) these changes do not reduce the effectiveness of the plan and the plan, as changed, continues to meet the requirements in 10 CFR 50, Appendix E and the planning standards of 10 CFR 50.47(b) including applicable exemptions. Further, the bases for previous NRC approvals of emergency planning exemptions and other changes remain unaltered.

Following approval of this proposed exemption, the agreement with Marine Corps Base - Camp Pendleton will be modified to focus on fire and emergency medical support. Those aspects of the agreement dealing with post-accident recommended evacuation of off-site areas will be eliminated in accordance with 10 CFR 50.54(q) on the basis that the function will no longer be necessary based on the NRC approval of this exemption, and that removing it will not result in a decrease in effectiveness of the plan. SCE will continue to notify appropriate off-site agencies of emergency event declarations.

The proposed exemption has been explained to other State and Local agencies as part of SCE's routine communications with the Interjurisdictional Planning Committee.

IV. EXEMPTION CRITERIA

Title 10 CFR Part 72, §72.7 provides the criteria for the NRC to grant exemption from the regulations in 10 CFR Part 72:

> *The Commission may, upon application by any interested person or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.*

This proposed exemption meets those requirements in the following ways:

a) Is authorized by law

The requested exemption is authorized by law in that no law precludes the activities covered by this exemption request. There are no provisions in the Atomic Energy Act or in any other federal statute (other than the regulation subject to the exemption request) that impose a requirement for a minimum distance from an ISFSI. The 100-meter-minimum-distance requirement seems to have no basis other than to ensure adequate protection of the public from radiological dose. SCE has performed an analysis showing that all doses remain within limits at

the proposed CAB. Therefore, there is no statutory prohibition on the issuance of the requested exemption and the NRC is authorized to grant the exemption under law.

b) Does not endanger life or property or the common defense and security

The granting of this exemption would not endanger life or property. Because members of the public already have access to the walkway bounded by the seawall (which marks the site boundary), members of the public already have access to all of the closest points to the ISFSI that are accessible to people up to physical barriers — including those points within 100 meters of the ISFSI. The granting of the exemption will not result in any more dose than is already possible to members of the public. Actual dose will continue to be monitored at appropriate points on the site boundary and at other locations and reported to the NRC.

The granting of this exemption will not endanger the common defense and security. It will not result in any changes to the physical arrangement of the plant, nor to its security features or to the security plan. The proposed exemption does not affect any physical structures, systems, or components or any physical access barriers. There would be no impact to the Physical Security Plan as a result of this proposed exemption.

c) The requested exemption is in the public interest

The proposed exemption supports the public interest of increased access to California's natural resources — in this case, the beach, shoreline, and ocean — which was the impetus for CSLC Lease Condition 32. If this exemption is approved, SCE can relinquish control of areas that are otherwise subject to control by SCE via agreement with various outside entities during off-normal and emergency conditions. These agreements have been interpreted by some as imposing potential constraints on public access to the beach.

SCE has briefed and will continue to brief and consult with the CSLC and CCC regarding the proposed exemption to ensure that its being granted will not interfere with SCE's compliance with CCC permit conditions.

V. ENVIRONMENTAL ASSESSMENT

The proposed exemption to the 100 meter minimum distance requirement of 10 CFR 72.106(b) and the resultant re-designation of the controlled area as depicted on the attached drawing would have no actual or potential environmental impacts.

1) The proposed action does not increase the probability or consequences of accidents. No changes are being made in the types or quantities any radiological effluent that may be released from the ISFSI. Further, there are no changes in direct doses from either normal operations or accident conditions. There is no increase in occupational or actual public radiation dose.

   Therefore, there are no radiological environmental impacts associated with the proposed action.

2) The proposed action does not affect non-radiological plant effluents and has no other environmental impacts.

   Therefore, there are no non-radiological impacts associated with the proposed action.

   Based on the above assessment, the proposed action will not have an adverse effect on the quality of the human environment.

Attachment

Figure – Proposed ISFSI Controlled Area Boundary